



Achievements of Uzbekistan in Integration of Education and Science

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***Annation.** For over the years of independence the Republic of Uzbekistan has carried out fundamental, structural and substantive reforms that have encompassed all levels of education system and its components, which were aimed at ensuring its compliance with the long-term objectives and interests of the country, modern requirements, as well as international standards. The appropriate legal framework reforming this sector was created, which defined as a priority the growth of investment, as well as the investments in human capital, training of educated and intellectually developed generation, which is the crucial asset and a decisive force in the achievement of democratic development, modernization and renewal, ensuring stable and sustainable growth of the economy.*

Today's rapidly globalization period requires renewal and growth of integration in every field, innovative thinking and the collective innovative environment based on them. As the President of the Republic of Uzbekistan Shavkat Mirziyoyev noted, "...the most important task is to form innovative thinking in the minds of our people. Without innovation, they will be no development and no competition..."

Collective innovation is the achievement of integration in the field of social and economic sectors, the creation of conditions for the expression of original inventions on the basis of inheritance and the development of the principle of "knowledge through science" to the level of innovation. The modern world has shown that the integration of innovative knowledge begins with an idea that arises from a deep understanding of these problems, active cooperation of scientific and technical personnel in this area, a prosperous life based on renewal, a factor that ensures social and economic growth, i.e. market.

In order to ensure the integration between science and education, in 2020, 65 academicians of the Academy of Sciences visited 33 academic lyceums, 27 professional colleges, 29 higher education institutions and 36 economic organizations, 21 agricultural research and production centers of Uzbekistan. Academicians and corresponding members were attached to 8 academic lyceums, 8 professional colleges, 8 higher education institutions and 13 economic organizations of the Republic.

A total of 162 action plans have been developed for the work carried out in educational institutions and organizations attached to academics, including 125 for academicians of the Academy of Sciences, 37 for academicians and corresponding members of the Uzbek Agricultural Research and Production Centre.

Universities are endowed with independence in integrating education and science in the world. For example, in terms of increasing scientific indicators in production, academic and scientific independence, independent determination of their scientific direction and forms of conduct research, educational institutions have the approach to work and management of education and research too. In this regard, we are also declining the functions of state control in the field of education and science year by year as well as creating ample opportunities for freedom of scientific activity. As a result of the on-going works to ensure the integration of education and science, overcoming the existing restrictions on the involvement of talented young people in scientific activities, the organization of research on the basis of PhD and strengthening scientific capacity and selection of highly qualified persons are being created to further enhance the prestige of scientific institutions and form new scientific institutions in the country. As a result of science management is supported a number of initiatives to establish cooperation between universities and research institutes. One of the most important events in the country is also the



establishment of both financial incentives and advocacy to raise the social status of scientific and scientific-pedagogical persons.

As a result of reform in the awarding of academic degrees, the potential of personnel with academic degrees has increased 5 times in the country over the past 5 years. This means that more and more young people are interested in scientific researches. In terms of sectors, the following significant figures can be cited 44% (2308 people) of those certified in DSc, PhD degrees are in the field of exact, natural and technical sciences, 40% (2095 people) in socio-humanitarian sciences and 15% (805 people) in medicine. During this period, about 200 graduates worked in foreign universities, among them the share of exact, technical and natural sciences – 59% (98 people), social and humanities sciences – 30% (50 people), medical sciences – 11 % (18 people) respectively. For comparison, in the period up to 2016, the approval of diplomas abroad was difficult, in 3 years only 7 diplomas were recognized, the existing artificial barriers were overcome, and the reforms in education and science in the country were based on the principle of international integration.

As a result of increasing the participation of women in society and scientific activities, creating good conditions for their effective participation, the share of women in the scientifically proven structure is about 40% (31% for DSc, 36% for PhD).

Currently, another important reform that is taking place to strengthen the scientific and academic status of universities should not be missed. In the previous period, the role of the state was gradually reduced in supervising the activities of universities, and a decision was made at the political level to give universities the authority to approve academic degrees and academic titles independently in the country. Certainly, this is expected to be done gradually, but in 10 years it will be possible to increase the scientific potential of universities have a good opportunity to attract foreign professors and create a basis for the integration and internationalization of education. In 2019, the National University of Uzbekistan for Binary Defence was authorized to independently approve candidates for the degrees of Doctor of Philosophy (PhD) and Doctor of Science (DSc), in 2020 the Institute of Mathematics and the Institute of Plant Chemistry, Institute of Polymer Chemistry and Physics, Uzbekistan National University, Institute of Biophysics and Biochemistry, Institute of Botanic, Karakalpak State University, Institute of Mineral Resources and Tashkent University of Information Technologies have been given the right to certify employees in academic titles.

Academy of Sciences of Uzbekistan has developed 39 approved projects for the commercialization of research results and their introduction into the state economy. They belong to different sectors of the economy and are expected to be implemented in collaboration with manufacturers and scientists.

International experience also shows that many developed countries, such as South Korea, China, Japan, France, Turkey, Indonesia, Israel, Singapore, have mechanisms to encourage young people to study abroad, return home and use their scientific potential. This international experience will serve as an important experience for the development of other developing countries.

The start of promising reforms in Uzbekistan is also reflected in an increase in the number of young people studying abroad. Over the past three years, more than 3000 young Uzbeks have been trained at prestigious international universities, including France, Italy, Spain, Germany, Denmark, Austria, Czech Republic, Ukraine, the Baltic countries and the Balkans. The qualified youth trained at these universities contributes to the comprehensive development of our country.

There are a number of notable works in the science of Uzbekistan to support young people. In 2020, the activities of the Council of Young Scientists of the Academy of Sciences of the Republic of Uzbekistan, the Laboratory of Molecular Biology and Biotechnology of the Institute of Zoology and the Department of Zoology of the Faculty of Biology of the National University of Uzbekistan named after Mirzo Ulugbek. The subject of “Applied Molecular Zoology” was introduced, which revealed its great potential. Its purpose is to train young scientists in the field of taxonomy, biogeography, and evolution and phylogenetic of the animal world using molecular data.



It is noteworthy that the bilateral relations of the institutes of the Academy of Sciences of Uzbekistan with international research centres have been strengthened. An Uzbek-Chinese centre for the production of medicines has been opened, and joint Uzbek-Chinese research laboratories have been established at a number of institutes. Relations with international organizations such as UNESCO, IAEA, MAAN and TWAS have been strengthened. Bilateral cooperation of research institutions of the Academy of Sciences with leading research centers and organizations of foreign countries is carried out. South Korean and Turkish companies have signed Memorandums of cooperation and investment agreements worth \$ 236.6 million.

By the way, the Startup ecosystem, which is an important link in the integration of science, has opened up new and prospective directions for the country. Over the years, a number of startup platforms have been established, including the Tech Central Asia Tashkent Startup Project Competition in partnership with the Turkish Council for Scientific and Technological Research (TUBITAK) and the US Embassy in Uzbekistan, the Startup initiatives in partnership with the Chamber of Commerce and Industry, as well as the United Nations Development Program. Of course, the link, which is important for the startup ecosystem, also supports government initiatives to develop venture funds. In particular, according to the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan “On measures to organize the activities of the National Venture Fund” UzVS” dated November 3, 2020 No 684, the first venture fund with a charter capital of 15 billion soums was established in our country.

Indeed, one of the most important areas is the commercialization of scientific developments and their introduction into production in several formats:

- On the basis of a new system of commercialization of scientific developments with the participation of the trio “scientist-entrepreneur bank” 19 developments were commercialized for 22.3 billion soums,
- The portal “customer-researcher-investor” was launched, more than 529 developments and 167 problems were registered. Negotiations were held with the participation of 10 authors of innovative projects included in the portal database, as well as local and foreign investors. Currently, work has begun on the implementation of 3 developments.

Indeed, the annual International Week of Innovative Ideas – InnoWeek is also important for the development of innovative entrepreneurship, and many foreign companies are interested in this process every year (more than 20 foreign countries in 2018, 257 foreign representatives from 96 organizations among 34 countries in 2019 attended). In particular, Memorandums of cooperation with companies from South Korea, Turkey, Armenia, Israel, Poland, Russia, China and India worth a total of 109.5 million USD investment agreements were signed during the week. In the framework of InnoWeek.uz – 2019 in cooperation with the Organization of Islamic Cooperation for the first time was held the international robotics competition “The Frist OIC Robotics Challenge”. It was attended by 160 foreign participants from 24 countries. This innovative field has shown its effectiveness despite the quarantine in 2020. In InnoWeek.uz 2020 online platform <https://www.innoweek.uz/> was visited by more than 22,500 observers from 86 countries, which are 5,599 watched the exhibition.

Therefore, it is also important to pay special attention to rejuvenate science and intensify the work on supporting the initiatives of talented youth, ensure the international competitiveness of science in the country as well as further strengthen the capacity of existing scientific institutions and develop their innovative potential. The Youth Academy and the Fund for Support of talented Youth under the Ministry of Innovative Development were established with a fund of 3.8 billion soums. Until now, the number of members of the Youth Academy in Uzbekistan has reached 1,800. In the regions of the country, 15 leaders were elected and 83 projects are being implemented by young talented people.

As a continuation of this work, there is a plan to gradually establish “Youth Technopark” in 13 areas of Uzbekistan. The purpose is to support young people of the regions in their interest in innovation and technological knowledge. Therefore, the first international robotics competition was organized between



the member states of the Organization of Islamic Cooperation, the International Robotics Challenge and the RoboCUP television competition are of great interest for youths of all ages. The winners of the competition were given the opportunity to participate in the Asian Science Camp in China and to enter the Polytechnic University of Turin in Tashkent. The winners were awarded cash prizes in the amount of 21 thousand US dollars.

The integration of education and innovation, science and industry is a step-by-step process and its first step is to understand the innovative ecosystem, prepare the legal framework for its creation and its participants on human resources. Another important task is to build educational standards on the basis of integration of knowledge and science, involve young people in the development of science, direct fundamental research to innovative scientific activities, and increase knowledge on the commercialization of new developments. In this regard, the fact that the state has begun to act as a general customer, rather than a general inspector, shows that there is a healthy environment in this process that works on the path of development is carried out on the basis of equality.

Today's world is developing very dynamically, current innovation may be outdated tomorrow, so the strategic task for Uzbekistan is to develop science in a forward-looking way, implement hi-tech and integrate education, science and industry in a way that guarantees future success. All this plays an important role in achieving the goals of Uzbekistan at a new level.

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